BODO MÖLLER CHEMIE

Engineer chemistry

Araldite® Adhesives & Encapsulating systems Technical Data Overview

Product	Colour	Chem. Base	Density	Viscosity	Pot life	Weight Mixing ratio A/B	Volume Mixing ratio A/B	Cartridge packaging	Cans/ Working Packs	Storage Stabiliy	tg value	Temp. Stability
Araldite F300	beige	MMA	1,2g/ml	20 Pa*s	2min	NoMix	NoMix		0,8kg, 6kg	3y. 2-8°C	40 °C (ca.)	80°C
Araldite F305	grey beige	MMA	1g/ml	4 Pa*s	2min	NoMix	NoMix		0,8kg	3y. 2-8°C	35 °C (ca.)	70°C
Araldite F330	beige	MMA	1g/ml	15-20	10min	NoMix	NoMix		0,8kg	3y. 2-8°C	54 °C	85°C
Araldite 2010-1 - AW4819/ XD4444	pale yellow	EP	1,16g/ml	80 Pa*s	10min	100/ 100	100/ 100	200ml		3y. 2-40°C	40 °C	100°C
Araldite 2011 - AW106/ HV953U	pale yellow	EP	1,05g/ml	30-45	100min	100/ 80	100/ 100	50ml, 200ml, 380ml	1kg/ 0,8kg, 2kg W	6y. 2-40°C	45 °C	90°C
Araldite 2012 - AW2104/ HW2934	pale yellow	EP	1,18g/ml	25-65	6min	100/ 100	100/ 100	50ml, 200ml	1kg/1kg, 2KG WP	3y. 2-40°C	40 °C	70°C
Araldite 2013-1 - AV144-2/ HV997-1	grey paste	EP	1,2g/ml	thixotropic	90min	100/ 60	100/ 100	50ml, 200ml, 380ml	1kg/ 0,6kg	3y. 2-40°C	63 °C	70°C
Araldite 2014-2 - AW139-1/ HV5323-1	grey paste	EP	1,6g/ml	thixotropic	110min	100/ 50	100/ 50	50ml, 200ml, 380ml	2kg WP	3y. 2-40°C	85 °C	140°C
Araldite 2015-1 - AV5308/ HV5309-2	grey paste	EP	1,4g/ml	thixotropic	50min	100/ 100	100/ 100	50ml, 200ml, 380ml	2kg WP	2y. 2-40°C	78 °C	100°C
Araldite 2018 - AY4446/ HV4445	pale opaque	PU	1,13g/ml	8 Pa*s	40min	100/ 95	100/ 100	200ml		2y. 2-40°C	10 °C (ca.)	80°C
Araldite 2020 - XW396/ XW397	transparent	EP	1,1g/ml	0,15 Pa*s	45min	100/ 30	100/ 35		0,5kg WP	4y. 2-40°C	40 °C	60°C
Araldite 2021-1 - F361-1/ Hardener F361-1	pale yellow	MMA	1g/ml	thixotropic	3min	100/ 100	100/ 100	50ml, 380ml		1,5y. 2-8°C	60 °C (ca.)	100°C
Araldite 2022-1 - F362-1/ Hardener F362-1	pale yellow	MMA	1g/ml	thixotropic	10min	100/ 100	100/ 100	50ml, 380ml		1,5y. 2-8°C	60 °C (ca.)	100°C
Araldite 2023-10 - F323-10/ Hard. F 323	Bright grey	MMA	1,09g/ml	non-sagging	10min	100/10	100/10	380ml pneum. Gun	18kg	1,5y. 2-8°C	46 °C (ca.)	85°C
Araldite 2023-30 - F323-30/ Hard. F 323	Bright grey	MMA	1,09g/ml	non-sagging	30min	100/10	100/10	380ml pneum. Gun	18kg	1,5y. 2-8°C	48 °C (ca.)	85°C
Araldite 2023-60 - F323-60/ Hard. F 323	Bright grey	MMA	1,09g/ml	non-sagging	60min	100/10	100/10	380ml pneum. Gun	18kg	1,5y. 2-8°C	49 °C (ca.)	85°C
Araldite 2028-1 - AY8629-1/ HY8628	transparent	PU	1,12g/ml	6 Pa*s	6min	100/ 100	100/ 100	50ml, 200ml		2y. 2-25°C	13 °C	55°C
Araldite 2029-1 - AW4840-1/ HW4841	dark grey paste	PU	1,32g/ml	60 Pa*s	40min	100/ 82	100/ 100	50ml, 380ml		2y. 2-40°C	49 °C	80°C
Araldite 2031-1 - AV4076-1/ HV5309-2	black paste	EP	1,3g/ml	thixotropic	70min	100/ 120	100/ 100	50ml, 380ml		2y. 2-40°C	75 °C	100°C
Araldite 2033 - AW4833/ HW4833	black paste	EP	1,3g/ml	thixotropic	120min	100/ 88	100/ 100	200ml		1y. 2-8°C	69 °C	100°C
Araldite 2047-1 - F347/ K100-1 RED	redbrown paste	MMA	1,2g/ml	thixotropic	10min	100/ 8.8	100/ 10	50ml, 480ml		2y. 2-8°C	80 °C	100°C
Araldite 2048-1 - F348/ Hardener F348-1	black paste	MMA	1,2g/ml	thixotropic	10min	100/ 11	100/ 10	50ml, 480ml		2y. 2-8°C	67 °C	100°C
Araldite 2050	pale yellow	MMA	1g/ml	thixotropic	2min	100/100	100/100	50ml, 380ml		1,5y. 2-8°C	110 °C	120°C
Araldite 2051	pale yellow	MMA	1g/ml	thixotropic	5min	100/100	100/100	50ml, 380ml		1,5y. 2-8°C	110 °C	120°C
Araldite 2052-1 - F252/ K100-1 RED	red paste	MMA	1g/ml	thixotropic	15min	100/ 12	100/ 10	50ml, 480ml		2y. 2-8°C	120 °C	140°C
Araldite AV 138-1/ HV998-1	grey paste	EP	1,7g/ml	thixotropic	30min	100/ 40	100/ 40		1kg/0,4kg	6y. 2-40°C	85 °C	140°C
Araldite AY103-1/ HY991	pale yellow	EP	1g/ml	5 Pa*s	300min	100/ 40	100/ 50		1kg/ 0,4kg	6y. 2-40°C	55 °C	90°C
Araldite AY105-1/ HY991	pale brown	EP	1,1g/ml	15 Pa*s	45min	100/ 50	100/ 60		1kg/ 0,4kg	6y. 2-40°C	100 °C	120°C
Araldite AW2101/ HW2951	pale grey paste	EP	1,8g/ml	thixotropic	6min	100/ 100	100/ 100	50ml, 200ml	280ml tube	4y. 2-40°C	48 °C	100°C
Araldite AV4415/ HV4416-1*	dark grey paste	EP	1,6g/ml	thixotropic	80min	100/ 50	100/ 50	200ml		4y. 2-40°C	135 °C	180°C
Araldite AW4858/ HW4858	black paste	EP	1,1g/ml	thixotropic	150min	100/ 42	100/ 50	50ml, 380ml		5y. 2-40°C	67 °C	90°C
Araldite AW4859/ HW4859*	black paste	EP	1,1g/ml	thixotropic	110min	100/ 43	100/ 50	50ml, 380ml		3y. 2-40°C	81 °C	140°C

*Hardening at elevated temperatures necessary
Pa= Packaging

Product	**Shore hardness**	**Elongation at 23°C**	**E-Modulus at 23°C**	**Flexural strength (ISO 178) at 23°C**	**Tensile strength (ISO 527) at 23°C**	**Roller peel test (ISO 4578) etched Alu.**	**0°C LSS > $1N/mm^2$**	**10°C LSS > $1N/mm^2$**	**15°C LSS > $1N/mm^2$**	**23°C LSS > $1N/mm^2$**	**40°C LSS > $1N/mm^2$**	**60°C LSS > $1N/mm^2$**
Araldite F300	D 80	7,2%			26MPa	6N/mm		5min	4min	0:03	2min	
Araldite F305		23%			17MPa	6N/mm		5min	4min	0:03	2min	
Araldite F330	D 80	3,5%			14MPa	7N/mm	1h	40min	30min	0:20	9min	
Araldite 2010-1 - AW4819/ XD4444		4%	1895MPa	45MPa		6N/mm		4h	2h	0:30	15min	5min
Araldite 2011 - AW106/ HV953U	D 74	9%	1900MPa	60MPa		5N/mm		24h	12h	7:00	2h	30min
Araldite 2012 - AW2104/ HW2934	D 64	4%	1650MPa	46MPa		5,5N/mm		35min	25min	0:20	5min	2min
Araldite 2013-1 - AV144-2/ HV997-1		1,8%	1370MPa	22MPa				15h	12h	5:00	80min	25min
Araldite 2014-2 - AW139-1/ HV5323-1		0,9%	3500MPa	60MPa	30MPa			13h	15h	5:00	90min	20min
Araldite 2015-1 - AV5308/ HV5309-2		4,2%	1800MPa	43MPa	31MPa			10h	6h	4:00	1h	20min
Araldite 2018 - AY4446/ HV4445	A 87	45%	16MPa		7MPa	4N/mm		16h	12h	4:00	45min	25min
Araldite 2020 - XW396/ XW397		4%	2400MPa			0,2N/mm		24h	20h	0:16	3h	90min
Araldite 2021-1 - F361-1/ Hardener F361-1		10%	1800MPa		42MPa			20min	13min	0:09	2min	
Araldite 2023-10 - F323-10/ Hard. F 323		100%	750MPa		22MPa			60min		0:40	15min	
Araldite 2023-30 - F323-30/ Hard. F 323		100%	750MPa		22MPa			2h		1:10	30min	
Araldite 2023-60 - F323-60/ Hard. F 323		100%	750MPa		21MPa			5h		1:40	45min	
Araldite 2022-1 - F362-1/ Hardener F362-1		5%	1700MPa		45MPa			30min	17min	0:12	6min	
Araldite 2028-1 - AY8629-1/ HY8628		60%	16MPa		11MPa	6,6N/mm		2h	75min	0:30	7min	3min
Araldite 2029-1 - AW4840-1/ HW4841	D 76	35%	600MPa		20MPa	3N/mm		9h	15h	4:00	70min	25min
Araldite 2031-1 - AV4076-1/ HV5309-2		12%	1200MPa	37MPa	23MPa	5N/mm		12h	7h	3:00	90min	15min
Araldite 2033 - AW4833/ HW4833		1,4%	2500MPa		22MPa			14h	8h	4:00	85min	15min
Araldite 2047-1 - F347/ K100-1 RED		14%	800MPa		14MPa			25min	20min	0:15	5min	
Araldite 2048-1 - F348/ Hardener F348-1	D 48	91%	364MPa		13MPa	5,4N/mm		70min	50min	0:35	10min	
Araldite 2050		20%	1800MPa		43MPa		25min	15min	11min	0:08		
Araldite 2051		20%	1800MPa		42MPa		60min	20min	13min	0:09		
Araldite 2052-1 - F252/ K100-1 RED		8%	1600MPa		28MPa			40min	30min	0:20	10min	
Araldite AV 138-1/ HV998-1	D 86	0,8%	4200MPa		29MPa			14h	8h	4:00	75min	20min
Araldite AY103-1/ HY991	D 80		1700MPa		38MPa	1N/mm			16h	12:00	2h	40min
Araldite AY105-1/ HY991								16h	12h	6:00	90min	30min
Araldite AW2101/ HW2951						4,5N/mm		12h	4h	1:00	20min	5min
Araldite AV4415/ HV4416-1*		1,2%	4540MPa		52MPa						80min	15min
Araldite AW4858/ HW4858	D 75	7%	1650MPa		61MPa	7N/mm		15h	12h	6:00	90min	25min
Araldite AW4859/ HW4859*	D 75	4,3%	1500MPa	65MPa	40MPa					4:30	100min	20min

Product	Aluminium	Steel 37/11	Stainless Steel V4A	Galvanized Steel	Copper	Brass	Glas	PC (Polycarbonate)	ABS	PMMA	PVC Hart	PA (Polyamid 6) cond.	EP-GFRP	EP-CRFP	SMC
Araldite F300	23	19	26	4	24	23		4	5	4	7	1	15		4
Araldite F305	23	22	22	2	17	23		7	6	6	9	3	19		4
Araldite F330	33	29	39	2	30	38		7	6	7	11	2	19		5
Araldite 2010-1 - AW4819/ XD4444	19	14	23	18	20	17		2	3	1	2	2	5	13	6
Araldite 2011 - AW106/ HV953U	26	25	22	18	24	24		4	5	3	2	4	12	19	7
Araldite 2012 - AW2104/ HW2934	18	21	27	11	19	21		4	4	3	4	2	9	14	5
Araldite 2013-1 - AV144-2/ HV997-1	20	19	23	18	21	22		2	2	2	5	2	13	19	10
Araldite 2014-2 - AW139-1/ HV5323-1	18	20	23	20	18	19		3	2	2	6	2	8	17	8
Araldite 2015-1 - AV5308/ HV5309-2	20	23	24	18	18	20		4	2	3	4	4	15	22	8
Araldite 2018 - AY4446/ HV4445	7	8	7	10	4	4		6	7	4	4	3	8	8	7
Araldite 2020 - XW396/ XW397	16	17	24	12	16	14	25	5	4			2			8
Araldite 2021-1 - F361-1/ Hardener F361-1	25	16	23	12				8	6	7	9	2	12	20	5
Araldite 2022-1 - F362-1/ Hardener F362-1	25	25	25	18	16	20		8	6	7	9	2	18	23	6
Araldite 2023-10 - F323-10/ Hard. F 323	15	17	21		20	20		4	7	8	7		18	24	8
Araldite 2023-30 - F323-30/ Hard. F 323	17	17	21		21	21		2	4	6	6		16	20	6
Araldite 2023-60 - F323-60/ Hard. F 323	16	15	18					4	6	7	6		17	23	9
Araldite 2028-1 - AY8629-1/ HY8628	15	17	10	14	9	11	7	4	5	3	5	3	13	16	5
Araldite 2029-1 - AW4840-1/ HW4841	24	24	23	19	20	17		6	6	4	5	4	25	27	6
Araldite 2031-1 - AV4076-1/ HV5309-2	22	24	25	21	22	24		5	2	3	3	2	20	20	6
Araldite 2033 - AW4833/ HW4833	16	19	18	16	17	17		3	4	2	6	3	9		8
Araldite 2047-1 - F347/ K100-1 RED	19	18	18	16	17	19		5	6	7	7	3	14	16	8
Araldite 2048-1 - F348/ Hardener F348-1	24	18	24	14	20	23		6	6	7	10	3	17	23	10
Araldite 2050	31	26	31	20	11	17		9	6	7	9	2	15	16	6
Araldite 2051	31	26	31	20	11	17		9	6	7	9	2	15	16	6
Araldite 2052-1 - F252/ K100-1 RED	25	21	25	4	24	25		4	3	5	7	3	14	17	3
Araldite AV 138-1/ HV998-1	15	18	19	18	15	17		2		2	4		12	15	8
Araldite AY103-1/ HY991	15	18	22	7	14	15		2	3		4	3	14		7
Araldite AY105-1/ HY991	14	16	17	12	12	12		3	4		2				6
Araldite AW2101/ HW2951	20	25	30	19	24	23									
Araldite AV4415/ HV4416-1*	22	20	21	14	16	15		4			4		19		7
Araldite AW4858/ HW4858	38	26	26	20	18	28		6	6	4	5	3	35	41	9
Araldite AW4859/ HW4859*	33	27	27	20	18	27		6	5	3	6	2	36	35	7

Linearic expansion coefficient 1/Kx10^{-6}	23,1	11,1	10	11	16,5	18,4	8,5	70	60-110	70-85	60-70	60-80	5-20	5-20	5-20
	Aluminium	Steel 37/11	Stainless Steel	Galvanized Steel	Copper	Brass	Glas	PC (Polycarbonate)	ABS	PMMA	PVC Hart	PA (Polyamid 6) cond.	EP-GFRP	EP-CRFP	SMC
Linearic expansion coefficient 1/Kx10^{-6}	23,1	11,1	10	11	16,5	18,4	8,5	70	80	75	65	70	15	15	15

BODO MÖLLER CHEMIE
Engineer chemistry

Arathane®

HUNTSMAN
Enriching lives through innovation

Gefülltes und ungefülltes Polyurethan Gießharz/Vergussmasse

System	resin		**CW 5620**	**CW 5620 ACC2**	**CW 5620 ACC5**	**CW 5650**	**CW 5660**	**XW 949-1 blue**	**XB 5633**	**U 6920**	**U 6920**	**U 6910**	**U 6942**	**CW 5631**
	hardener		**HY 5610**	**HY 5610**	**HY 5610**	**HY 5610**	**HY 5610**	**HY 5610**	**HY 5610**	**U 001B**	**HY 5611-1**	**HY 5611-1**	**U 001B**	**HY 5610**
Type of System			PU/filled	PU/filled	PU/filled	PU/filled	PU/filled	PU/unfilled	PU/filled	PU/filled	PU/filled	PU/filled	PU/filled	PU/filled
Color			blue/black	blue	black	grey	black	blue	black	withe	withe	black	beige/black/red	black
Density of casting		g/cm3	1.44	1.44	1.44	1.44	1.53	1.0	1.48	1.48	1.48	1.52	1.49	1.52
Filler content	resin	%												
Mixing ratio	resin/hardener	parts by weight	100/22	100/22	100/22	100/11	100/13	100/50	100/20	100/25	100/25	100/25	100/16	100/25
	resin/hardener	parts by volume	100/25	100/25	100/25	100/13	100/17	100/50	100/25	100/33	100/33	100/33	100/19	100/30
Viscosity	resin	mPas/°C	2500/25	2500/25	2500/25	4500/25	2000-5000/25	4000-6500/25	4000/25	5000-9000/25	5000-9000/25	3500-7000/25	3500-6000/25	3400-5100/25
	hardener		80-120/25	80-120/25	80-120/25	80-120/25	80-120/25	80-120/25	80-120/25	100-160/25	180-240/25	180-240/25	100-160/25	80-120/25
	mixture	mPas/25°C mPas/°C	1300	n.a.	n.a.	4000	2000 940/40	2100	1500	2500	3000	3300 1200/40	3300 300-600/60	3000
Pot life		min / °C / mPas	25/25/5000	n.a.	n.a.	15/25/15000	10/25/5000 60/40/5000	15/25/5000	25/25/5000			25/25/5000 20/40/5000	35/23/5000	14/25/5000
Gel time		min/°C	70 / 25	**2 / 25**	5-10 / 25	35 / 60	470 / 25 93 / 60	45 / 25 30 / 40 23 / 60	120 / 25 40 / 60	5-8 / 23	6 / 25		30-60 / 23	60 / 25 36 / 40
Minimum curing time		h/°C	24 / 25 or 6 / 80	24 / 25 or 6 / 80	24 / 25 or 6 / 80	24 / 25 or 6 / 80	24 / 25 or 6 / 80	24 / 25 or 6 / 80	24 / 25 or 6 / 80	24 / 25 or 6 / 80	24 / 25 or 6 / 80	24/25 or 6/80	24 / 25 or 6 / 80	24 / 25 or 6 / 80
Glass transition temperature (DSC)		°C	20	20	20	-47	-16	**-62**	25	45	60	55	20	47
Martens deflection temperature		°C												
Thermal conductivity	25°C	W/mK	0.5	0.5	0.5	0.5	0.7	0.19	0.63			0,77	0,55	0.6
Coefficient of linear thermal expansion		ppm/K	55@Alpha1 150@Alpha2	55@Alpha1 150@Alpha2	55@Alpha1 150@Alpha2	43@Alpha1 162@Alpha2	44@Alpha1 133@Alpha2	163@20-80°C	150@Alpha2			60@Alpha1 135@Alpha2	130-160	70@Alpha1 135@Alpha2
Thermal class			B (130°C)	B (130°C)	B (130°C)	E (120°C)	**F (155°C)**	B (130°C)	B (130°C)	B (130°C)	**F (155°C)**	**F (155°C)**	E (120°C)	**F (155°C)**
Shore hardness	23°C	Shore D	D40 / A85	D40 / A85	D40 / A85	- / A78	D29 / A85	20	D40 / A89	65	74	82	D40 / A87	80
Flammability	UL 94	grade	V-0 (6mm)	V-0 (6mm)	V-0 (6mm)	V-0 (6mm)	V-0 (6mm)		V-0 (6mm)		V-0 (6mm)	V-0 (6mm)	V-0 (6,4mm)	V-0 (6mm)
Glow-wire test (850°C)			IEC 60695-2-11											IEC 60695-2-11
Flexural strenght max bending stress	25°C	MPa						2.5				72		53
surface strain failure	25°C	%						27						
Modulus of elasticity	25°C	MPa	21	21	21	11	17	16.5	27			4600	26	2100
Tensile stength max bending stress	25°C	MPa	7	7	7	2	2	4.3	5			38	4	30
surface strain failure	25°C	%	**70**	**70**	**70**	56	51	37	110			2	44	6
Modulus of elasticity	25°C	MPa												
Compressive strenght max.	25°C	MPa												
Impact strength		kJ/m2											15-20	
Water absorption	23°C	days / %	1 / 0.15	1 / 0.15	1 / 0.15	1 / 1.0	1 / 0.28	1 / 0.33	1 / 0.15	1 / 0.2	1 / 0.2	1 /0.2	1 / 0.13	1 / 0.1
	100°C	min / %	30 / 0.33	30 / 0.33	30 / 0.33	30 / 1.0		30 / 0.41	30 / 0.54				30 / 0.29	30 / 0.3
Dielectric strenght		kV/mm	25	25	25	27	19	26.1	20	18	18	29	20-24	**29**
Dielectric dissipation factor tan δ (50 Hz)	25°C	%	11	11	11	34	8.2	1	12.5	1.2	1.5	2.1	13	3
	60°C	%												
Relative permittivity ε_r (50 Hz)	25°C		6	6	6	9	9.1	2.9	7.2	4.4	4.5	4.4	5.5	4.5
	60°C												8-9/70°C	
Volume resistivity ρ	25°C	Ohm cm	1×10^{13}	1×10^{13}	1×10^{13}	10×10^{10}	1×10^{12}	4×10^{15}	1×10^{13}	1×10^{15}	1×10^{15}	1×10^{15}	1×10^{14}	7×10^{14}
	60°C	Ohm cm												
Tracking resistance CTI		CTI	>600	>600	>600	>600	>600	>600	>600				>600	>600
Electrolytic corrosion		grade	A-1	A-1	A-1		A-1	A-1	A-1					A-1

Encapsulating systems Araldite®

HUNTSMAN
Enriching lives through innovation

Epoxidharz Gießharz gefüllt, Raumtemperatur härtend

System	resin		CW 1312	CW 1304	CW 1302	CW 2243-2L	CW 2243-2L	CW 2243-2L	CW 2245	CW 2245	CW 2248	CW 2249	XB 2252	CW 2250-1	CW 5730N
	hardener		**HY 1300**	**HY 1300**	**HY 1300**	**HY 1872**	**HY 842**	**HY 2966**	**HY 2966**	**HY 956 EN**	**HY 956 EN**	**HY 2851**	**XB 2253**	**HY 2251**	**HY 2966**
Type of System			EP/filled	EP/filled/Wollastonite	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled
Color			beige	beige	beige	grey/blue	grey/blue	grey/blue	beige/black	beige/black	beige	beige	green/black	green/beige	black
Density of casting		g/cm3	1.75	1.75	1.65	1.42	1.5	1.58	1.6	1.61	1.58	1.41	1.54	1.57	1.73
Filler content	resin	%	75	66	66	59	59	59	58	58	55	43	56	57	71
Mixing ratio	resin/hardene	parts by weight	100/9	100/12.5	100/11	100/22	100/20	100/11	100/9	100/10	100/11	100/30	100/13	100/13	100/8
	resin/hardene	parts by volume	100/16		100/19	100/38	100/34						100/20	100/20	100/15
Viscosity	resin	mPas/°C	22 000 / 25	210 000/25	40 000 / 25	10 000 / 25	10 000 / 25	10 000 / 25	18 000 / 25	18 000 / 25	16 000 / 25	6000-8000/25	5000-10000/25	8000 / 25	80000/25
	hardener		190 / 25	190 / 25	190 / 25	150 / 25	700 / 25	500 / 25	500 / 25	450 / 25	450 / 25	1300-2100/25	100-500/25	100 / 25	500/25
	mixture	mPas/25°C	11000	17500	10000	4400	2600	4400	10000	7500	6500	1700	2300	**1700**	50000/25
		mPas/°C	3500/40	5750/40	3500/40	560/60	1100/40	1600/40	3000/40	2500/40	4200/40	150/60		**400/50**	
Pot life		min / °C / mPas		34/25/15000			180/25/15000	40/25/15000		48/25/15000	27/25/15000	200/25			
			50/40/15000	28/40/15000	37/40/15000	46/60/15000	120/40/15000	25/40/15000		38/40/15000	20/40/15000	104/40	37/40/15000	60/40/15000	
Gel time		min/°C			120 / 25		300 / 25			111 / 25			100 / 25	135 / 25	35 / 25
					75 / 40	110 / 60	180 / 40			54 / 40			60 / 40	80 / 40	
			37 / 60		30 / 60	35 / 80	60 / 60	13 - 20 / 60		22 / 60			30 / 60	40 / 60	13 / 60
Minimum curing time		h/°C	48 / 25 or 8 / 40 or 4 / 60	24/25 or 8/40 or 2/60	48/25 or 8/40 or 2/60	2/80	48/25 or 16/40 or 8/60	24/25 or 12/40 or 6/60	24/25 or 8/40 or 2/60	24/25 or 12/40 or 6/60	24/25 or 12/40 or 6/60	≥72/25; ≥15/40; 6-10/60	24/25	24/25 or 12/40 + 2/60	24/25 or 2/40 or 1/60
Glass transition temperature (DSC)		°C	21	76	76	**8**	22	37	55	63	86	68	65	54	39
Martens deflection temperature		°C		80	58			<25	49	54	65	50			
Thermal conductivity	25°C	W/mK	**1.1**	0.53	0.88	0,53	0.6	0.8	0.65	0.67	0.69	0.38	0.66	0.67	1.1
Coefficient of linear thermal expansion		ppm/K	32@Alpha1 140@Alpha2	48@24-46°C 80@46-56°C	42@Alpha1 105@Alpha2	44@Alpha1 143@Alpha2	86@Alpha1 143@Alpha2	43@Alpha1 131@Alpha2	75 @ 20-40°C	69 @ 20-40°C	44 @	70	60@Alpha1 100@Alpha2	65@Alpha1	30 @ Alpha1 90 @ Alpha2
Thermal class			B (130°C)		**H (180°C)**		B (130°C)	B (130°C)		E (120°C)			**H (180°C)**	B (130°C)	
Shore hardness	23°C	Shore D	57		88	**20**	41	70	74	80	81	77	86	**88**	82
Flammability	UL 94	grade	V-0 (6mm)	HB	V-0 (6mm)		V-0 (6mm)	V-0 (6mm)	V-0 (4mm)	V-0 (4mm)	V-0 (6mm)		V-0 (6mm)	V-0 (4mm), NF 16-101	V-0 (6mm)
Glow-wire test (850°C)														passed	
Flexural strenght max bending stress	25°C	MPa	5-7	105	**63**			24			90	85	70	77	
surface strain failure	25°C	%	>15	1	**1**			15			1.5	2.5		1.34	
Modulus of elasticity	25°C	MPa	70-80	8450	8450	18	26	960		5500	6500	3500	5000	3200	
Tensile stength max bending stress	25°C	MPa	4-5	30	**30**	3.5	6	16	38	36	45	45	41	45	35
surface strain failure	25°C	%	7-16	0.5	**0.5**	26	22	15	1.1	0.8	1	1.5	1.5	1.45	1.65
Modulus of elasticity	25°C	MPa													
Compressive strenght max.	25°C	MPa	33-36	103	103			31			112	50			
Impact strength		kJ/m2	10-16		**4.5**			12							
Water absorption	23°C	days / %	1 / 0.34	**1 / 0.04**	**1 / 0.04**	1 / 0.67	1 / 0.22	10 / 0.2	1 / 0.06	1 / 0.17	**1 / 0.09**	10/0.2	1 / 0.2	1 / 0.15	10 / 0.31
	100°C	min / %	30 / 0.39	**30 / 0.22**	**30 / 0.22**	30 / 0.63	30 / 0.6	30 / 0.4	30 / 0.22	30 / 0.23	**30 / 0.22**	30/0.27	30 / 0.4	30 / 0.47	30 / 0.29
Dielectric strenght		kV/mm	15	15	27	22.2	23	15	18	16	15	16	29	28	22
Dielectric dissipation factor tan δ (50 Hz)	25°C	%	18	9.3	5.3	14.2	14	5	6	5	7.9		4.4	3.5	4
	60°C	%		17.9			30	10.5	16	13					10
Relative permittivity ε_r (50 Hz)	25°C		8	5	4.9	7.7	7	5.7	6.4	5.2	5.3		4.7	4.6	5.1
	60°C				6.5			8.2	9	7.7					7.3
Volume resistivity ρ	25°C	Ohm cm	5×10^{11}	5×10^{14}	**5×10^{14}**	1.3×10^{11}	1×10^{11}	3×10^{14}	9×10^{13}	2×10^{14}	5×10^{14}		1×10^{14}	5×10^{14}	7×10^{14}
	60°C	Ohm cm			**4×10^{13}**		1×10^{9}		8×10^{10}	3×10^{11}	5×10^{13} / 50°C				1×10^{12}
Tracking resistance CTI		CTI	>600		>600	>600	>600	>600			>600	>600	>600	>600	>600
Electrolytic corrosion		grade	A-1.2		A-1.2		AB/1.4	AN/1.2			A-1	A-1	A-1		A-1

BODO MÖLLER CHEMIE
Engineer chemistry

Encapsulating systems Araldite®

HUNTSMAN
Enriching lives through innovation

Gießharz ungefüllt, Raumtemperatur härtend

System	resin hardener		DBF HY 2966	DBF HY 842	DBF HY 956	DBF HY 951	CY 220-1 HY 956	CY 221 HY 842	CY 221 HY 2967	CY 221 HY 2966	CY 221 HY 956	CY 223 HY 956	F HY 956	MY 740 HY 840-1	MY 740 HY 956
Type of System			unfilled	unfilled	unfilled	unfilled	unfilled	unfilled	unfilled	unfilled	unfilled	unfilled	unfilled	unfilled	unfilled
Density of casting		g/cm3	1.10	1.10	1.10	1.19	1.15	1.10	1.10	1.10	1.15	1.10	1,1		1.10
Mixing ratio	resin/hardener	parts by weight	100/25	100/40	100/20	100/10	100/25		100/35	100/25	100/20	100/30	100/25	100/50	100/25
Viscosity	resin	mPas/°C	1500 / 25	1500 / 25	1500 / 25	1500 / 25	5000 / 25	450 / 25	450 / 25	450 / 25	450 / 25	500 / 25	11000 / 25	12000 / 25	12000 / 25
	hardener		450 / 25	750 / 25	420 / 25	10 /25	420 / 25	750 / 25	3400 / 25	500 / 25	420 / 25	420 / 25	420 / 25	12500 / 25	420 / 25
	mixture	mPas/25°C	1500	1400	1800	850	2250	400	750	490	450	**595**	4410	14000	4390
		mPas/40°C	700	550	1300	280	650			205	75	190	850	2400	820
Pot life		min / °C / mPas	35 / 25 / 5000	129 / 25 / 5000	70 / 25 / 5000	93 / 25 / 5000	25 / 25 / 5000	**210 / 25 / 3000**	42 / 25 / 3000	33 / 25 / 980	120-180/25/3000	90 / 25 / 15000	38 / 25 / 15000	80 / 25 / 50000	12 / 40 / 1500
			20 / 40 / 5000	83 /40 / 5000	45 / 40 / 5000	59 / 40 / 5000			19 / 50 / 3000	13 / 40 / 980	60-90/40/3000	31 / 40 / 1500	11 / 40 / 1500	65 / 40 / 50000	
Gel time		min/°C	42 / 25	134 / 40	62 / 40	160 / 25			40 / 25	45 / 40	45 / 40				
			28 / 40	47 / 60	15 / 60	70 / 40			18 / 40	10 / 60	10 / 60			85 / 40	
			10 / 60			20 / 60			8 / 40	4 /80	4 /80			27 / 60	
Minimum curing time		h/°C	24 / 25 or 4 / 25 + 4 / 60	24-48 / 25 or 4 / 25 + 4 / 60	24 / 25 or 4 / 25 + 6 / 60	24 / 25 or 4 / 25 + 4 / 60	24 / 25 or 8-10 / 40 or 3-4 / 60	24 / 25 or 12 / 40	24 / 25 or 4 / 25 + 4 / 60	24 / 25 or 4 / 25 + 4 / 60	24-36 / 25 or 8-10 / 40 or 3-4 / 60	24 / 25 or 6-10 / 40 or 2-3 / 60	24 / 25 or 6-10 /25 or 2-3 / 100	8 / 80 or 23 / 24 + 8 / 80	24 / 25 or 2-3 / 60
Glass transition temperature		°C	54		64	67	75		25	29		57	**80**	**90**	**79**
Thermal conductivity	25°C	W/mK			0,15					0,15					
Thermal class					E (120°C)					B (130°C)				A (105°C)	
Shore hardness	23°C	Shore D	80	64	80	85	80	**6-10**	24	25	32-36	**78**	74	80-85	74
Tensil strength / flexural strenght	23°C	Mpa	61 / 112	**17 / 19.5**	58 / 107	52 / n.a.	70 / 120	1,3 / n.a.	6 / n.a.	5 / n.a.	6 / -.-	75 /	69 / -.-	-.- / 105-110	83 / -.-
Elongation break	23°C	%	4.7	**31**	12	11	4	25-35	50-70	55	45	3	4	8.5-9.0	4
Modulus of elasticity	23°C	Mpa	3050		2880	2800		n.a.	n.a.	n.a.		3230	3372	2470-2540	3506
Impact strength		kJ/m2	68	44	68	n.a.		n.a.	n.a.	n.a.	30-70		n.a.	n.a.	n.a.
Water absorption	10d/23°C		**0.39**	1.04	0.63	0.53	0.4	4	1.5	0.7	4	0,51	0,5		0.43
	30min/100°C		0.41	0.54	0.65	0.57	0.7		1.5	0.88		0,34	0,49		**0.16**
Dielectric dissipation factor tan δ (50 Hz)	25°C	%	0.7	5.2	0.8	1.2		8.7	9	7.2	7-8	0,4	0.25	0.4	0.4
	60°C	%	6		5.5							0.8	1.3	2.1	0.3
	80°C	%	6									9.4	3.5	10.3	3.0
	100°C	%	30										11.6		11.0
Relative permittivity ε_r (50 Hz)	25°C		3.9	4.8	4.1	4.2		5.5	6	6.0	6-7	3,5	4.1	**2.2**	4.1
	60°C		5.5		5.5				8.4	8.8		3.8	4.3	**2.4**	4.3
	80°C		7									5.1	4.8	**3.3**	5.0
	100°C		7.5										5.6		5.5
Volume resistivity ρ	25°C	Ohm cm	8×10^{15}	9×10^{13}	7×10^{15}	7×10^{15}		5.4×10^{10}	3×10^{12}	5×10^{12}	5×10^{12}	1×10^{16}	**5×10^{16}**		4×10^{15}
	60°C	Ohm cm	1×10^{13}		$1{,}5 \times 10^{13}$			4.1×10^{9}	7×10^{10}			1×10^{14}	**3×10^{14}**		4×10^{13}
	80°C	Ohm cm	2×10^{11}									4×10^{11}	**2×10^{12}**		6×10^{11}
	100°C	Ohm cm	2×10^{10}										**2×10^{11}**		6×10^{10}
Breakdown strength		kV/mm	24	24	24	25	21	21	18	36	18	29	21	20-24	28
Tracking resistance CTI		A solution	>600-0.2	>600-0.4	>600-0.4		>600	KA 3c	>600		>600	>600-0.2			>600-0.2
		B solution													
Electrolytic corrosion		grade	A-1	A-1	A-1		A-1	B-2	A-1	AN/1	AB-B/1.4	A-1			A-1

BODO MÖLLER CHEMIE

Engineer chemistry

Impregnating systems Araldite®

HUNTSMAN

Enriching lives through innovation

Epoxidharz Tränkharz ungefüllt heiss härtend

System	resin		XD 4410	MY 740	MY 740	MY 740	MY 740	MY 740	CY 179CH	CY 192-1	GY 282	MY 757	MY 790-1	MY 750
	resin			HY 906	HY 906	HY 2919	HY 1102	HY 905	HT907	HY 918	HY 918	HY 2918	HY 1102	HY 5922
	filler			DY 073-1	DY 070		DY 062	DY 062	DY 072		DY 073-1	DY 062	DY 073-1	
Type of System			unfilled/Bis A	unfilled/Bis A	unfilled/Bis A	unfilled/Bis A	unfilled/Bis A	unfilled/Bis A	unfilled/cyclo	unfilled/cyclo	unfilled/Bis F	unfilled/Bis A	unfilled/Bis A	unfilled/Bis A
Density of casting		g/cm3	1.16											
Mixing ratio		parts by weig	1K	100/80/1	100/95/1.2	100/86	1.12-1.16	100/100/1.3	100/105/8.5	100/100	100/82/0.25	100/85/1.3	100/90/0.04	100/55
Viscosity	resin	mPas/25°C		10.000-14.500	10.000-14.500	10.000-14.500	10.000-14.500	10.000-14.500	250-450	430-660	3300-4100	550	4000-6000	12000-16000
	hardener			170-350	170-350	75	70	200	40-50	50-80	50-80	65	70	<10
	mixture	mPas/25°C	1350-1850	900/40		950	50-150	1510		300	300	213	300/28	350
		mPas/°C	150/40	90/60		70/60	60-100/60	120/60	**21/80**	**30/60**	**30/60**	**35/60**	40/56	170/40
Pot life		days/°C/mPa	28/65/3000			>50/25/15000		>50/25/15000			600h/25/1500	>75h/25/15000		
		h/°C/mPas	5/80/3000	22h/60/225		3.25h/60/1500	16h/60/1500	3.25/60/1500			80/60/1500	4.25/60/1500	1100/40/1500	4.5/30/1500
Gel time		min/°C	200/120		33/80		390/80		6-7h/80	500/90	20h/60		9.5h/100	16h/30
			30/140		7/100		90/100			180/120	4h/100		200/100	180/60
			9/160		3/120		25/120			35/160	1h/120		60/140	
Curing time		h/°C	4/125 + 12/170	6h/100 + 12h/135	30/110+30/170+30/200	2/80+2/120	4/80+8/140	2/80+2/120	10/80+16/140	14/120 or 11/130 or 9/140	4/100 + 10/140	2/80+2/120	24/80+10/140	6/40+3/80
Shore hardness	23°C	Shore D	80-85			76		73				75		
Flexural strenght	23°C	MPa	95-105	130-140	140-150				95-105	110-150	145-155			95-105
Surface Stain	23°C	%	4-5	5.1-5.7	5.5-6.5				3.0-3.5	5-8	5-6			3.5-4.5
E modulus from flexural strenght		MPa	2700-3000		2500-3500				3000-3200		3000-3500			2700-3100
Tensil strength		MPa	40-50		75-85	61	40-50	88	30-50		95-105	82	125-130	55-65
Elongation at break		%	1.5-2.5		3.5-4.5	2	1.5-2	4	1.0-3.0		7-8	3	**4.5-5.5**	6-9
E modulus from tensil strenght		MPa	2700-3000		3000-4000	3637		3436	2800-3400		3000-3500	3750	3100-3200	2800-3200
Bend Notch Test														
Critical Stress Intensity Factor K_{IC}		$MPa.m^{1/2}$	0.55-0.65		0.5-0.7									4.2-4.4
Specific energy at break G_{IC}		J/m^2	90-110		70-100									5100-550
Glass transition temperature (DSC)		°C	120-140	130-140	**165-175**	123	135-145		160-190	90-95	105-115	98	135-150	40-45
Thermal class			F							F			H	
Thermal Index (TI) weight loss	20.000/10.000h		179/195										205/-	
Impact strength		kJ/m2		14-17										60-70
Coefficient of linear thermal expansion		ppm/K	70-73		65-70/20-60°C		65-70@alpha1		65-75/20-60°C					
Thermal conductivity	25°C	W/mK	0.2-0.3		0.15-0.2		0.15-0.2		0.15-0.2					
Water absorption	60min/100°C	%	0.2-0.3	0.15-0.2	0.2-0.25	30min/0.05	0.15-0.25	30min/0.05	0.3-0.5	0.2-0.3	0.15-0.25	30min/0.12	0.15-0.2	4d/23°C/0.35-0.45
	4d/100°C	%		1.0-1.1	10d/0.5-0.6			10d/23°C/0.25	3-5	1d/100°C/0.4-0.5	10d/100°C/0.2-0.3	0.22	10d/23°C/0.1-0.2	10d/23°C/0.55-0.65
Dielectric dissipation factor tan δ (50 Hz)	100°C	%	1	1	0.2	0.3	25°C/3.1-3.3	23°C/0.1	0.7	23°C/0.4-0.5	23°C/0.4-0.5	6.4	0.2	
	140°C	%	4	1	1.2			100°C/0.8	0.9	60°C/0.3-0.4	60°C/0.4-0.5		6	
	160°C	%	19	13	5				1.1	80°C/0.5-0.6	80°C/0.4-0.5		8	
Relative permittivity ε_r (50 Hz)	100°C		4.0-4.3	3.7	3.4		25°C/0.2-0.4	3.4	3.8	3.8-4.0	3.5	3.6	3.5	23°C/3.7
	140°C		4.3	4	3.5				3.8		4		4	
	160°C		4.5	5	3.6				3.8		5.5		5.5	
Volume resistivity ρ	25°C	Ohm cm	$2x10^{16}$		$6x10^{17}$	$3x10^{16}$	$1x10^{16}$	$3x10^{16}$	$3x10^{16}$	$1x10^{16}$	$4x10^{16}$	$6x10^{16}$	$1x10^{17}$	$7{,}7x10^{15}$
	100°C	Ohm cm	$2x10^{16}$		$9x10^{13}$	$1x10^{15}$		$6x10^{14}$	$1x10^{16}$		$6x10^{14}$	$2x10^{13}$	$1x10^{16}$	
	140°C	Ohm cm	$8x10^{12}$		$3x10^{12}$				**$2x10^{15}$**		$1x10^{11}$		$1x10^{13}$	
	160°C	Ohm cm	$8x10^{10}$		$7x10^{11}$				**$8x10^{14}$**				$6x10^{12}$	
Gamma dose rate				tested										
HV arc resistance		s			70-80					180-190				
Breakdown strength		kV/mm		26-30	22-26	19	22-26	19	18-24		20-25	19	25-30	
Tracking resistance CTI		A solution		>600-0.0	>600-0.0	>600-0.2		>600-0.2	600- <1	>600	>600 -<1	600-0.2	>600-0.2	
		B solution		>600M-0.0	>600M-0.1				>600M-<1				>600M-0.3	
Electrolytic corrosion		grade		A-1		A-1	A-1	A-1			A1	A-1	A-1	

BODO MÖLLER CHEMIE
Engineer chemistry

Trickle impregnation resin systems Araldite®

HUNTSMAN
Enriching lives through innovation

Epoxidharz Träufelharz

System	resin			**CY 246**	**Araldite F**	**CY 236**	**CY 236**
	hardener			**XB 5911**	**XB 5911**	**XB 5911**	**XB 5979**
Type of System				unfilled	unfilled	unfilled	unfilled
Flash point	resin	°C	ISO 1523	>200	>200	>182	>182
	hardener	°C	ISO 1523	>118	>118	>118	>112
Vapour pressure	resin	Pa	(Knudsen)	<0,01	<0,01	<0,01	<0,01
	hardener			<0,01	<0,01	<0,01	<0,01
Density of casting	resin	g/cm3		1.15-1.2	1.15-1.2	1.15	1.15
	hardener	g/cm3		1.0	1.0	1.0	1.0
Mixing ratio		parts by weight		100/32	100/32	100/35	100/30
Viscosity components	resin	mPas/°C	ISO 12058	9000-10800	9000-13000	1200-1600	1200-1600
	hardener			120-160	120-160	120-160	120-200
Viscosity mixture	mixture	mPas/min/°C	ISO 12058	2500/0/25	2500/0/25	1000/0/25	1800/0/25
				2700/30/25	2700/30/25	1000/60/25	1800/30/25
				4800/60/25	5000/60/25	2000/120/25	2500/60/25
				7000/90/125	8000/90/125	12000/240/25	5000/90/25
				16500/120/25	17500/120/25	40000/300/25	16000/150/25
Geltime measured with Gelnorm		min/°C	ISO 9396	50/50	60/50	45/50	
Instrument in function of temperature				25/60	25/60	27/60	20/60
				8/80	8/80	9/80	7/80
				4/120	4/120	1.8/100	2/120
Geltime at thin layer in function of T		min/°C		6/110	6/110		5/110
(measurements on heating plate)				4/120	4/120		
				3/130	3/130		2.5/130
				2/150	2/150		2/150
Curing time		h/°C		3/80 + 3/130	3/80 + 3/130	1/130	3/80 + 3/130
Glass transition temperature		°C	ISO 11357-2	140-150	135-140	128	90-105
Thermal class				F (155°C)	F (155°C)	F (155°C)	
Tensil strength		MPa	ISO R 527	75-85	75-85		65-75
Elongation at break		%	ISO R 527	5-7	6-7		5-7
E modulus from tensile test		MPa	ISO R 527	2300-2800	2500-2850		2300-2800
Flexural strenght		MPa	ISO 178	125-135	125-135		105-115
Surface strain		%	ISO 178	8-9	8-9		8-9
E modulus from flexural test		MPa	ISO 178	2450-2850	2450-2850		2250-2650
Impact strength		kJ/m2	ISO 179	40-50	40-50		25-35
Water absorption	30min/100°C	% by wt.	ISO 62	0.15-0.25	0.15-0.3		0.40-0.50
Decomposition temperature (heating rate: 10K/min) DTA		°C	TGA	≥350	≥350		≥350
Dielectric dissipation factor tan δ (50 Hz)		%/°C	IEC 60250	0.5/23	0.5/23		0.5/23
		%/°C		1/80	1/80		6/70
		%/°C		6/110	6/110		2.5/90
		%/°C		2.5/130	2.5/130		14/120
		%/°C		14/160	14/160		
Relative permittivity ε_r (50 Hz)	23°C		IEC 60250	4	4		4
	60°C			4.1	4.1		4.2
	80°C			4.2	4.2		4.3
	100°C			4.3	4.3		4.4
Volume resistivity ρ	25°C	Ohm cm	IEC 60093	$3x10^{16}$	$3x10^{16}$		$3x10^{16}$
	60°C	Ohm cm		$1x10^{16}$	$1x10^{16}$		$1x10^{16}$
	80°C	Ohm cm		$8x10^{15}$	$8x10^{15}$		$5x10^{15}$
	100°C	Ohm cm		$5x10^{15}$	$5x10^{15}$		$1x10^{14}$

BODO MÖLLER CHEMIE
Engineer chemistry

Power Gießharz Araldite®

HUNTSMAN
Enriching lives through innovation

Gefüllt, Härtung bei erhöhten Temperaturen

System	resin		Araldite F	CY 5980	CY 5936	CY 5948	CW 229-3	CY 5995	CY 5995	CY 5995	CY 228-1	CY 228-1	CY 225	CY 225	CY 225
	hardener		HY 905	HY 5980	HY 5945	HY 5945	HW 229-1	HY 5996	HY 925	HY 227	HY 918	HY 918	HY 925	HY 225	HY 227
	flex		DY 040	DY 040								DY 045			
	accelerator		DY 061	DY 061							DY 062	DY 062			
	filler		Silicia flour	Silicia flour	Silicia flour	Silicia flour		Silicia flour	Silicia flour	Silicia flour	Silicia flour	Silicia flour	Silicia flour	Silicia flour	Silicia flour
Type of System			Bis-A EP/flex; tds dif. filler load	Bis-A EP/flex, class H	**Bis-A/F Ep/**flex low viscous	**Bis-A/F EP** flex low viscous	Bis-A EP/ prefilled	Bis-A EP/ toughened	Bis-A EP/ toughened	Bis-A EP/ toughened	Bis-A EP	Bis-A EP flex	Bis-A EP low viscous/flex **long-term data tds**	Bis-A EP low viscous/flex **long-term data tds**	Bis-A EP low viscous/flex
Color							red-brown								
Density of casting		g/cm3			1.8-1.9	1.8-1.9	1.85	1.76	1.7-1.8	1.7-1.8	1.75-1.85	1.75-1.85	1.75-1.85	1.75-1.80	1.77-1.81
Filler content	resin	%	66	66	66	66	resin 55-58 hardener 62-65	60	60	60	65	65	60	60	60
Mixing ratio	resin/hardener/acc/filler	parts by weight	100/100/10/1/410	100/95/15/1/410	100/80/350	100/83/355	100/100	100/87/280	100/80/270	100/100/300	100/85/345/0.8	100/85/20/385/0.8	100/80/270	100/80/270	100/100/300
Viscosity	resin	mPas/°C	9000-12000/25	600-7000/25	1500-2500/25	2000-3000/25	120000/25	45000-70000/25	45000-70000/25	45000-70000/25	5200-6200/25	5200-6200/25	8,5-15Pas/25	8,5-15Pas/25	8,5-15Pas/25
	hardener		150-250/25	150-250/25	250-600/25	250-600/25	12000/25	100-250/25	250-450/25	1500-4000/25	50-80/25	50-80/25	250-450 mPa*s	1500-2500/25	1500-4000/25
	mixture	mPas/25°C	15000/60	15000/60	1000/60	1000/60	2000/60	3000/60	9000/60	9000/60	8000/60	8000/60	6000/60	10000/60	10000/60
		mPas/°C	1000/80	10000/80	700/80	800/80		1000/90	3000/80	3000/80	2500/80		2000/80	2000/80	2500/80
Pot life		min / °C / mPas					480/60/15000 150/80/15000	420/60/15000 200/80/15000	14h/60/15000 450/80/15000	7h/60/15000 240h/80/15000	150/60/15000 70/80/15000		300/60/15000 180/80/15000	180/60/15000 105/80/15000	120/60/15000 105/80/15000
Gel time		min/°C	100/80 15/120	100/80 12/120 3/140	800/80 100/120 40/140	800/80 100/120 35/140	300/80 18/120 6/140	110/80 18/120 3/140	16h/80 40/120 13/140	300/80 35/120 15/140	110/80 12/120 4/140	150/80 18/120 4/140	300/80 12/120 3/140	280/80 15/120 5/140	130/80 18/120 4/140
Minimum curing time		h/°C	6/80+10/130	4/80+6/140	10/140	10/140	10/80+10/140	5/80 + 10/140	12/130 + 8/140	12/130 + 8/140	4/80 + 8/140	4/80 + 8/140	12/130 or 8/140	6/80 + 10/130	6/80 + 10/130
Mould temperatur/demolding times	APG process	°C/min			130-140/10-30	130-140/10-30	130-160/10-40	130-150/12-40	130-160/12-40	130-160/12-40	120-160/10-45	120-160/10-45	130-160/10-40	130-160/10-40	130-160/10-40
	Vacuum casting	°C/h	80-100/6-12	60-100/4-8	80-100/4-8	80-100/4-8	70-100/4-8	70-100/4-8	70-100/5-8	70-100/5-8	80-100/1-6	80-100/1-6	70-100/5-8	70-100/5-8	70-100/5-8
Glass transition temperature (DSC)		°C	90-100	60-80	65-75	75-85	115	130-150	115-125	55-65	110-120	65-75	105-115	90-105	60-70
Martens deflection temperature		°C	80-90				100-110					70-75	110-115	90-100	
Thermal conductivity	25°C	W/mK	0.8-0.9				0.7	0.75-0.8	0.75-0.8	0.75-0.8	0.95-1.05	0.95-1.05	0.8-0.9	0.8-0.9	0.8-0.9
Coefficient of linear thermal expansion		ppm/K	31-36@20-60°C	34-40@25-55°C	40-45	35-40	27-30@20-80°C 100 @90-170°C	35-39@20-105°C	35-39@20-80°C	41-45@20-40°C	36-39@20-110°C	40@20-80°C	35-37@20-60°C	36-40@20-60°C	41-46@20-50°C
Thermal class			F (155°C)	H (180°C)	F (155°C)	F (155°C)	H (180°C)	F (155°C)			H (180°C)		H (180°C)		F (155°C)
Flammability	UL 94	grade	HB 4mm/V1 12mm				V-1 (12mm)	HB (4mm)	HB (4mm)	HB (4mm)	V1 (12mm)		V1 (12mm)	HB 4mm/V1 12mm	HB 4mm/V1 12mm
Flexural strenght max bending stress	25°C	MPa	25-135	130-140	130-140	140-150	120-130	115-125	125-135	130-140	125-135	130-140	110-125	120-130	135-145
surface strain failure	25°C	%	1.1-1.5	1.3-1.5	1.2-1.4	1.4-1.6	1.4-1.6	1.6-1.7	1.8-2	2.2-2.4	1.20-1.40	1.3-1.5	1.2-1.7	1.5-2.0	1.8-2.2
Modulus of elasticity	25°C	MPa	11600-12000	11500-12500	11500-12500	13000-14000	9600-10000	8400-8600	9100-9500	9400-9700	11000-12000	11500-12500			9700-10200
Tensile stength max bending stress	25°C	MPa	75-85	75-85	75-85	80-85	80-90	70-80	80-90	65-75	80-90	80-85	70-80	75-85	70-80
surface strain failure	25°C	%	0.9-1.1	1.0-1.2	1.2-1.4	1.0-1.2	1.3-1.5	1.3-1.4	1.3-1.5	1.7-2.1	0.90-1.10	0.80-1.00	1.0-1.3	1.2-1.7	2.0-2.5
Modulus of elasticity	25°C	MPa	12000-13000	11500-12500	11500-12500	12000-13000		8500-9500	8600-9600	8500-9500	11000-12000	12000-13000	10000-11000	9600-10600	9400-10400
Compressive strenght max.	25°C	MPa	140-150	170-190	160-170	170-180	170-190				160-180	145-165	140-150	140-150	120-130
Double torsion test															
Critical stress intensity factor (K_{1C})		$Mpa*m^{1/2}$	2.7-2.9	2.9-3.1	3.1-3.3	3.0-3.2	2.8-3	2.0-2.1	2.4-2.6	3.4-3.6	2.3-2.5	2.65-2.85	1.8-2.0	2.3-2.7	2.8-3.2
Specific energy at break (G^{1C})		J/m^2	570-620	700-800	820-870	650-700	670-750	420-500	575-625	1100-1200	420-490	620-670	300-350	550-650	850-950
Impact strength		kJ/m2	10-12	8-12	10-13	11-13	9-11		11-13	14-16	8-12	10-15	7-10	11-13	11-13
Water absorption	23°C	days / %	10 / 0.10-0.20	10 / 0.06-0.08	10 / 0.09-0.13	10 / 0.09-0.13	10 / 0.1-0.2	10 / 0.15-0.2	10 / 0.15	10 / 0.25	10 / 0.10-0.15	10 / 0.10-0.20	10 / 0.10-0.15	10 / 0.10-0.2	10 / 0.10-0.15
	100°C	min / %	60 / 0.10-0.20	60 / 0.10-0.15	60 / 0.15-0.24	60 / 0.12-0.18	60 / 0.4	60 / 0.1-0.15	100 / 0.65-0.7	100 / 1.10-1.25	60 / 0.05-0.10	60 / 0.20-0.25	60 / 0.10-0.15	60 / 0.10-0.2	60 / 0.30-0.35
Chrackresistance shock test		°C/%	-10/75				-80/100	-10/25	-20/90	-80/90	-10/10	-40/93	-10/28	-10/73	-60/85
Dielectric strenght	IEC 60243-1	kV/mm	18-22	20-30	23-25	23-25	20	19-24	19-23	19-24	20-24	20-24	18-20	18-20	18-20
Rogowski electrodes	IEC 243-1	kV/mm/Gap mm	36-41/2										60/2	140/0.5	32-38/2
Diffusion breakdown strenght		class	HD 2	HD 2	HD 2	HD 2	HD 2	HD 2	HD 2	HD 1	HD 2	HD 2	HD 2	HD 2	HD 2
Temperature of speciment after test		°C	≤ 23	≤ 23	≤ 23	≤ 23	≤ 23	≤ 23	≤ 23	≤ 23	≤ 23	≤ 23	≤ 23	≤ 25	25-31
HV arc resistance		s	185-195	183-185	189-196	**185-205**	93-125	181-185	182-185	182-185	185-190	185-190	182-186	182-186	
HV Tracing and erosion resistance	Class	kV													
Dielectric dissipation factor tan δ (50 Hz)	23°C	%	1.2	3	3		1.2	3	3.5	3	2	2	2	1	2
	60°C	%	2.5	4	4		1.7	4	3.8	5	4	4	2.5	2	4
Relative permittivity ε_r (50 Hz)	23°C		4	4	4		4.3	4	4	4	4	4	4	4	4
	60°C		4	4	4		4.3	4.5	4	4,5	4,5	4,5	4,5	4	4,5
Volume resistivity ρ	25°C	Ohm cm	5×10^{15}	1×10^{15}	1.8×10^{15}	2×10^{15}	1×10^{16}	5×10^{15}	5×10^{15}	5×10^{15}	5×10^{15}	5×10^{15}	5×10^{15}	5×10^{15}	5×10^{15}
	60°C	Ohm cm	3×10^{15}	1×10^{14}	6×10^{14}	1×10^{15}	5×10^{15}	3×10^{15}	1×10^{15}	1×10^{15}	3×10^{15}	5×10^{14}	1×10^{15}	1×10^{15}	5×10^{14}
Tracking resistance CTI		A CTI	>600-0.0	>600M-0.0	>600M-0.0	>600M-0.0	>600-0.0	>600-0.0	>600-0.0	>600-0.1	>600-0.0	>600-0.0	>600-0.0	>600-0.0	>600-0.0
Electrolytic corrosion		grade	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	AN 1.2	A-1	A-1	A-1	A-1
Outdoor												•			•
Indoor			•	•	•	•	•	•	•	•	•		•	•	•
Large volumen casting								•	•	•					
gas insulated switchgears										•			•		
switch components							•		•		•		•	•	•
apparatus components			•					•	•	•	•	•	•	•	•
bushings			•				•	•	•		•	•	•	•	•
insulators					•	•	•	•				•	•		
crack sensitive post insulators															
instument transformers							•		•	•		•		•	
dry type distribution transformers			•	•	•	•	•		•	•	•				•
sensors															
encapsulation of large metal parts								•	•	•					
impregnation of high voltage coils and windings															

System	resin hardener flex accelerator filler		**CT 5900** **HT 901** **Silicia flour**	**CT 5900** **HT 903-1** **Silicia flour**	**CT 5900** **HT 923** **Silicia flour**	**XB 5950** **XB 5951**	**XB 5915** **XB 5916**	**XB 5938** **XB 5939**	**CY 184** **HT 907** **DY 071** **Silicia flour**	**CY 184** **HY 1235** **DY 062** **Silicia flour**	**CY 184** **HY 1235** **DY 062** **Silica W12 EST**	**CY 184** **HY 1235** **DY 044** **DY 062** **Silica W12 EST**	**CY 5622** **HY 1235** **DY 062** **Silicia flour**	**XB 5918-3** **XB 5919-3**	**XB 5957** **XB 5958**
Type of System			Solid Bis-A EP large volume casting	Solid Bis-A EP large volume casting	Solid Bis-A EP large volume casting	Bis-A EP; alumina prefilled; toughened	Bis-A EP prefilled toughened	Bis-A EP prefilled	Cyclo-EP	Cyclo-EP	Cyclo-EP	Cyclo-EP flex	Cyclo-EP hydrophobic	Cyclo-EP prefilled toughened	Cyclo-EP prefilled hydrophobic
Color															
Density of casting		g/cm3	1.65-1.75	1.65-1.75	1.65-1.75	2.0	1.65	1.9	1.6-1.7	1.6-1.7			1.85-1.95	1.8	1.85-1.95
Filler content	resin	%	61	60	60	60	58	66	61	60	66	66	66	61.5	66
Mixing ratio	resin/hardener/acc/filler	parts by weight	100/30/200	100/40/210	100/40/210	100/100	70/100	100/100	100/90/2/3000	**100/90/0.5/290**	**100/90/0.6/370**	100/90/20/0.6/410	100/82/0.45/355	100/100	100/100
Viscosity	resin hardener	mPas/°C	**300-500/120**	**300-500/120**	300-500/120		10-30Pa*s/40°C 3-30Pa*s/40°C	6-16Pa*s/40°C 6-35Pa*s/40°C	0,7-0,9Pa*s/25°C 40-50mPa*s/40°C	0,7-0,9Pa*s/25°C 70-80 mPa*s	0,7-0,9Pa*s/25°C 70-80 mPa*s	0,7-0,9Pa*s/25°C 70-80 mPa*s	3000-5000/25 70-80 mPa*s	8-18 Pa*s 2,5-5.5 Pa*s	60-140 Pa*s 60-100 Pa*s
	mixture	mPas/25°C mPas/°C	3000/110 700/130	3000/110 700/130	2600/110 1000/130	3000/60 1500/80	5000/60 2000/80	600/60 200/80	2000/60 1000/80	1000/60 800/80	1000/60 800/80	1000/60 800/80	7500/60 3500/80		5000/60 2000/80
Pot life		min / °C / mPas	**357/120/15000**	**240/120/15000**	70/120/15000	500/60/15000 100/80/15000	420/60/15000 150/80/15000	240/60/15000 105/80/15000		300/60/15000 75/80/15000				300/60/15000 90/80/15000	150/60/15000 80/80/15000
Gel time		min/°C	**500/120** 200/140	**300/120** 200/140	100/120 40/140	280/80 6/160	200/80 20/120 5/140	200/80 20/120 6/140	120/80 10/120 4/140	70/80 6/120 3/140	90/90 3/120 2/140	90/90 3/120 2/140	90/80 10/120 4/140	500/80 13/120 6/140	110/80 12/120 4/140
Minimum curing time		h/°C	10-20/140	10-20/140	24/140	6/80 + 10/140	2/100+5/140+ 2/160	10/80+10/140	6/80+10/140	2/100+16/140	2/100+16/140	2/100+16/140	6/80+10/140	2/100+16/140	16/140
Mould temperatur/demolding times	APG process	°C/min				130-150/12-40	130-150/12-40	130-160/10-40	130-150-10-40	130-150/10-30	130-150/10-30	130-150/10-30	130-150/10-30	130-160/10-50	130-150/10-30
	Vacuum casting	°C/h	120-140/4-8	120-140/4-8	100-140/4-8	70-100/5-8	70-100/5-8	70-100/4-8	80-100/3-8	80-100/2-4	80-100/2-4	80-100/2-4	80-100/2-4		80-100/2-4
Glass transition temperature (DSC)		°C	115-135	110-120	110-120	**140-150**	135-145	80-90	100-110	100-110	105-115	75-85	100-115	105-120	105-120
Martens deflection temperature		°C			100-110		125-135		95-105		90-105	65-75			
Thermal conductivity	25°C	W/mK	0.75-0.90		0.75-0.90	0.75-0.80	0.6-0.65	0.95-1.05	0.8-0.9	0.7-0.9	1.0-1.1	1.0-1.1	0.95-1.05	0.8-0.9	0.95-1.05
Coefficient of linear thermal expansion		ppm/K	35-38@20-60°C	36-38@20-60°C	36-38@20-80°C	34-40@20-60°C	27-30@20-60°C	35-45@20-55°C	39-41@20-60°C	35-38@20-80°C	34-38@20-80°C	34-75@20-80°C	32-35@20-80°C	34-36@20-90°C	25-32@20-60°C
Thermal class															
Flammability	UL 94	grade	HB 4mm/V1 12mm	HB 4mm/V1 12mm	HB 4mm/V1 12mm	HB 4mm/HB 12mm	HB (12mm)			HB 4mm/V1 12mm				V1 (12mm)	V0 (13mm)
Flexural strenght	max bending stress 25°C	MPa	135-145	140-155	145-155	110-120	110-120	130-140	150-165	120-130	150-160	150-160	130-150	155-165	130-150
	surface strain failure 25°C	%	1.6-1.7	1.2-1.5	1.8-2.0	1.5-1.8	1.5-1.6	1.4-1.6	1.9-2.2	1.1-1.5	1.25-1.75	1.5-2.0	1.35-1.65	2.0-2.2	1.1-1.5
	Modulus of elasticity 25°C	MPa	9900-10300	9700-10700	9600	7500-8300	8500-8800	10600-11500		9850-10250	12500-13000	11500-12000	11300-11800	9900-10400	
Tensile stength	max bending stress 25°C	MPa	85-95	85-95	85-95	70-80	70-80	70-80	90-100	85-95	90-100	80-90	80-105	80-95	80-100
	surface strain failure 25°C	%	1.1.-1.4	1.2-1.5	1.4-1.6	1.3-1.8	1.1-1.3	1.3-1.5	1.7-1.9	1.2-1.6	0.8-1.1	1.1-1.4	1.20-1.60	1.8-2	1.0-1.4
	Modulus of elasticity 25°C	MPa	10000-11000	9700-10700	9400-9800	7800-8600	8400-9400	10200-10600	10000-11000	9900-10300	14000-15000	12000-13000	11300-11700	9600-10600	11200-11800
Compressive strenght max.	25°C	MPa		180-200	165-200				160-170						
Double torsion test															
Critical stress intensity factor (K_{1C})		Mpa*m$^{1/2}$	2.1-2.4	2.2-2.4	2.3-2.5	1.9-2.1	2.6-2.8	2.6-2.8	2.2-2.5	2.15-2.35	2.4-2.8	2.8-3.2	2.40-2.60	2.6-2.9	2.4-2.6
Specific energy at break (G^{1C})		J/m^2	420-470	460-510	530-580	440-480	720-780	580-640	510-540	470-500	410-590	540-720	490-530	610-660	420-470
Impact strength		kJ/m2	9-11	10-13	01. Okt			10-12	8-9	9-11	9.5-12.5	8.5-11.5		11-13	
Water absorption	23°C 100°C	days / % min / %	10 / 0.10-0.20 60 / 0.05-0.10	10 / 0.10-0.20 60 / 0.05-0.10	10 / 0.10-0.20 60 / 0.10-0.20	10 / 0.20-0.25 60 / 0.05-0.10		10 / 0.10-0.20 60 / 0.12-0.22	10 / 0.10-0.20 60 / 0.15-0.20	10 / 0.10-0.20 60 / 0.08-0.15	10 / 0.05-0.15 60 / 0.05-0.08	10 / 0.10-0.20 60 / 0.15-0.25		60 / 0.05-0.15	10 / 0.05-0.15 60 / 0.05-0.15
Chrackresistance shock test		°C/%				-32/50		-40/70						-60/30	-40/75
Dielectric strenght	IEC 60243-1	kV/mm				24		20-23	19-21	18-20	18-20		21-26	18-22	21-26
Rogowski electrodes	IEC 243-1	kV/mm/Gap mm	35-40/2	34-38/2	32-36/2		43-49/2			40-45/2	40-45/2				
Diffusion breakdown strenght		class	HD 2	HD 2	HD 2	HD 2	HD 2		HD 2	HD 2	HD 2	HD 2	HD 2	HD 2	HD 2
Temperature of speciment after test		°C	25-31	25-31	25-31	≤ 23	≤ 23		≤ 25	≤ 25	≤ 25	≤ 25	≤ 24	≤ 23	≤ 24
HV arc resistance		s	183-194		184-193	180-185	90-135	186-198	185-190	189-193	189-193	187-190	184-186	185-190	182-186
HV Tracing and erosion resistance	Class	kV									1B 3.5	1B 3.5	1B3.5		1B3.5
Dielectric dissipation factor tan δ (50 Hz)	23°C	%	1.8		1	1	0,5	1	1.5	1	1	1	1	1	2
	60°C	%	3		1.5	1	1	2.1	3	1	1,8	2	2	2.5	2
Relative permittivity ε_r (50 Hz)	23°C		4		4	4.6	4.1	4	4	4	4	4	4	4	4
	60°C		4.5		4	4.7	4.1	4.1	4.3	4	4	4.3	4	4	4
Volume resistivity ρ	25°C	Ohm cm	5×10^{15}		8×10^{15}	**5×10^{17}**	1×10^{16}	5×10^{15}	5×10^{15}	5×10^{15}	5×10^{15}	5×10^{15}	5×10^{15}	8×10^{15}	6×10^{15}
	60°C	Ohm cm	1×10^{15}		5×10^{15}	**8×10^{15}**	5×10^{15}	1×10^{15}	1×10^{15}	1×10^{15}	1×10^{15}	1×10^{15}	1×10^{15}	2×10^{15}	5×10^{15}
Tracking resistance CTI		A CTI	>600-0.0		>600-0.0	>600-0.0	>600-0.0	>600-0.0	>600-0.0	>600-0.0	>600-0.0	>600-0.0	>600-0.0	>600-0.0	>600-0.0
Electrolytic corrosion		grade	A-1		A-1			A-1	A1	A1	A1	A1	A1	A-1	
Outdoor									•	•	•	•	•	•	•
Indoor			•	•	•	•	•	•							
Large volumen casting			•	•	•		•								
gas insulated switchgears						•							•		
switch components				•	•										
apparatus components						•	•		•	•	•	•			•
bushings				•	•	•	•	•	•	•	•	•	•	•	•
insulators						•	•		•		•	•	•	•	•
crack sensitive post insulators								•							
instument transformers				•	•			•	•		•	•	•	•	•
dry type distribution transformers				•	•										
sensors													•		•
encapsulation of large metal parts				•											
impregnation of high voltage coils and windings				•											

BODO MÖLLER CHEMIE

Engineer chemistry

Araldite®

HUNTSMAN

Enriching lives through innovation

Gefülltes Epoxidharz, heiss härtend

System	resin		**CW 5730 N**	**CW 1305**	**CW 1446 BDF**	**CW 2250**	**CW 1116-1**	**CW 1116-1**	**CW 1116-1**	**CW 1491 BD**
	hardener		**HY 5731**	**HY 5809**	**HY 2919**	**HY 2919**	**XW 1257-1**	**HY 2919**	**HY 2123**	**HW 1491 BD**
Type of System			EP/filled	EP+Aromatic Amin	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled
Color			black	beige	beige	Yellow/Beige/Grey	red-brown	red-brown	red-brown	blau
Density of casting		g/cm3	1.59		1.66	1.54	1.59	1.62	1.62	1.67
Filler content	resin	%	71		65	57	resin 61 hardener 46	resin 61 hardener -	resin 61 hardener -	resin 66 hardener 56
Mixing ratio	resin/hardener	parts by weight	100/28	100/8	100/24	100/30	100/100	100/31	100/31	100/100
	resin/hardener	parts by volume	100/52	100/14		100/41	100/120		100/44	100/105
Viscosity	resin	mPas/°C	65000-120000/25	180 000 / 25	3800-6800/50	8000/25	35 000/25	30 000/25	30 000/25	800 000/25
	hardener		500-900/25	150-190 / 25	50-100/25	50-100/25	7 500/25	75/25	75/25	165 000/25
	mixture	mPas/25°C	7000		3500	1160	3500/40	490/40	400/40	175 000
		mPas/°C	360/80	754/80	300/60	390/50	1400/60	150/60		1300/80
Pot life		min / °C / mPas	380/60/15000		97/60/1500	120/25/1750	300/60/15000	260/60/15000	360/60/15000	4/60/15000
			115/80/15000	123/80/5000	220/60/15000	420/25/2540	75/80/15000	140/80/15000	90/80/15000	2.5/70/15000
Gel time		min/°C	145 / 80 36 / 100				130 / 80 34 / 100		23 / 100	
Minimum curing time		h/°C	3/80 + 6/100	4/80 + 4/120	5.5/100	3/80 + 3/110	3/80 + 6/100	2/70 + 4/110	2/70 + 4/110	16/80 or 4/80 + 2/120
Glass transition temperature (DSC)		°C	25	130	95	78	32	108	122	25
Martens deflection temperature		°C			85			103	113	
Thermal conductivity	25°C	W/mK	0.61		0.67	0.51	0,68	0.55	0.55	0.82
Coefficient of linear thermal expansion		ppm/K	40@Alpha1 100@Alpha2	41@Alpha1	48@20-81°C 134@95-100°C			45@40-100°C	45@40-100°C	83@32-46°C 119@46-59°C
Thermal class			H (180°C)		H (180°C)		F (155°C)		F (155°C)	F (155°C)
Shore hardness	23°C	Shore D	65	88	92		55	86	90	75
Flammability	UL 94	grade	V-0 (6mm)	V-0 (4mm)	V-0 (6mm)	V-0 (6mm)	V-0 (6mm)	V-0 (6mm)	V-0 (6mm)	V-0 (4mm)
Glow-wire test (850°C)							IEC 60695-2-11			
Flexural strenght max bending stress	25°C	MPa	6	67	100	78	13	86	86	14
surface strain failure	25°C	%	8.1	1.1	1.5	1.29	8	1.4	1.3	13
Modulus of elasticity	25°C	MPa	130	7900	7400	6437	260	6880	6400	260
Tensile stength max bending stress	25°C	MPa	5.6		47	51.8	9	60	51	9
surface strain failure	25°C	%	45		1.5	1.04	12	1.25	1.2	11
Modulus of elasticity	25°C	MPa				6465				
Compressive strenght max.	25°C	MPa			105-115					
Impact strength		kJ/m2			**4-7**			**6.5**	**5.5**	
Water absorption	23°C	days / %	1 / 0.43		**1 / 0.06**	**1 / 0.05**		**1 / 0.06**	**1 / 0.06**	**1 / 0.06**
	100°C	min / %	30 / 0.27		**30 / 0.14**	**30 / 0.15**		30 / 0.13	30 / 0.13	**30 / 0.18**
Dielectric strenght		kV/mm	28	22.1	25	29.7	28	16	16	15
Dielectric dissipation factor tan δ (50 Hz)	25°C	%	3.4	3.2	1.5	1.5	4	0.7	1.3	5
	60°C	%	6.5		3.5	3.5	4.8	0.9	2.6	7
Relative permittivity ε_r (50 Hz)	25°C		4.7	5.2	4	3.8	4	3.8	4.1	5
	60°C		6.1		4.3	4.3	5.3	3.8	4.2	6.8
Volume resistivity ρ	25°C	Ohm cm	4×10^{14}	3.6×10^{14}	1×10^{15}	2×10^{15}		2×10^{15}	2×10^{15}	7×10^{14}
	60°C	Ohm cm		1×10^{14}		5×10^{15}		8×10^{14}	8×10^{14}	3×10^{11}
Tracking resistance CTI		CTI	>600		>600		>600	>600	>600	>600
Electrolytic corrosion		grade	A-1		A-1			A-1	A-1	A-1.2

System	resin		CW 2122-1	CW 2122-1	XB 5763	CW 5725	CW 5742	CW 1195-1	CW 2710-1	CW 229-3
	hardener		HY 2123	HY 2901-2	HY 5726	HY 5726	HY 5726	HW 1196	HW 2711-1	HW 229-1
Type of System			EP/filled	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled	EP/filled
Color			red-brown	red-brown	black	black	black	black	black	red-brown
Density of casting		g/cm3	1.54	1.47	1.65	1.71	1.71	1.73	2.1	1.85
Filler content	resin	%	58	58		65		resin 61 hardener 67		resin 55-58 hardener 62-65
Mixing ratio	resin/hardener	parts by weight	100/34	100/105	100/26	100/28	100/33	100/100	100/100	100/100
	resin/hardener	parts by volume	100/48	100/135	100/42	100/45	100/53	100/92	100/100	
Viscosity	resin	mPas/°C	40 000/25	20000-40000/25	10000-20000/60	8000/60	4000-12000/25	90000/25	120000-185000/25	120000/25
	hardener		75/25	4000-6000/25	70/25	70/25	70/25	16500/25	25000-60000/25	12000/25
	mixture	mPas/25°C	1800/25	6140	1200		1500	17000	5800/60	
		mPas/°C	590/40	850/60	600/60	420/60	220/60	300/80		2000/60
Pot life		min / °C / mPas	24/40/15000	260/60/15000	410/60/15000	190/60/15000	400/60/15000	12h/60/15000	400/60/100000	8/60/15000
			6/60/15000	135/70/15000	120/80/15000	130/80/15000	125/80/15000	4h/80/15000		2.5/80/15000
Gel time		min/°C	8 / 60	500 / 60	300/70	310/70	200/70		35 / 90	300/80
			3,40 / 70	125 / 80	160/80	160/80	110/80		20 /100	18/120
			1,5 / 80	35 / 100	80/90	80/90	64/90	22/140	6-10 / 120	6/140
Minimum curing time		h/°C	4/70 + 3/100 or 3/80 + 2/110	4/70 + 6/90	2/85 + 2/100	2.5/90 + 2.5/140	2/80 + 1/120 + 2/200	6/80 + 5/140 or 6/140	1/90 + 1.5/140	10/80 + 10/140
Glass transition temperature (DSC)		°C	115	15	126	144	**200 – 230***	146	120	115
Martens deflection temperature		°C						130		100-110
Thermal conductivity	25°C	W/mK	0.51	0.36	0.56	0.65	0.65	0,65	**1.7**	0.7
Coefficient of linear thermal expansion		ppm/K	50@20-80°C 70@90-110°C	70@Alpha1 160@Alpha2				28@20-130°C 90@150°C	24@Alpha1 67@Alpha2	**27-30@20-80°C** **100@90-170°C**
Thermal class			H (180°C)	F (155°C)	H (180°C)	H (180°C)	H (180°C)	H (180°C)	H (180°C)	H (180°C)
Shore hardness	23°C	Shore D	81	D45 / A94	90	90	90	95	92	
Flammability	UL 94	grade	V-0 (1.5mm)	V-1 (4mm)				V-0 (6mm)	V-0 (12mm)	V-1 (12mm)
Glow-wire test (850°C)										
Flexural strenght max bending stress	25°C	MPa	94	2.1	114	90	80	112	78	120-130
surface strain failure	25°C	%	1.7	10	1.6	1.4	1.2		0.6	1.4-1.6
Modulus of elasticity	25°C	MPa	6270	44	8100	7800	7000	11100	13000	9600-10000
Tensile stength max bending stress	25°C	MPa	58	7	82		38	44		80-90
surface strain failure	25°C	%	1.2	48	1.9		0.5	1.3		1.3-1.5
Modulus of elasticity	25°C	MPa								
Compressive strenght max.	25°C	MPa								170-190
Impact strength		kJ/m2	8					6		9-11
Water absorption	23°C	days / %	1 / 0.1	1 / 0.23		10 / 0.08	10 / 0.45	1 / 0.2		10 / 0.1-0.2
	100°C	min / %	30 / 0.16	30 / 0.34		30 / 0.05	30 / 0.12	30 / 0.08		60 / 0.4
Dielectric strenght		kV/mm		25	41	25	41	14	25	20
Dielectric dissipation factor tan δ (50 Hz)	25°C	%	1,75	4.7	1.1	0.4	2	0.5	1.2	1.2
	60°C	%	2			0.8		1.2		1.7
Relative permittivity ε_r (50 Hz)	25°C		4	4.5	4	4.2	4.6	3.7	4.7	4.3
	60°C		4.1			4.3		3.7		4.3
Volume resistivity ρ	25°C	Ohm cm	2×10^{16}	1×10^{14}	1×10^{15}	4×10^{15}	1×10^{15}	8×10^{16}	1×10^{14}	1×10^{16}
	60°C	Ohm cm	9×10^{15}			2×10^{15}		4×10^{15}/120°C		5×10^{15}
Tracking resistance CTI		CTI	>600	>600		>600	>600	>600		>600
Electrolytic corrosion		grade	A-1	A-1		A-1	A-1	AN/1.2		A-1

BODO MÖLLER CHEMIE

Engineer chemistry

Europa

Bodo Möller Chemie GmbH
Deutschland (Zentrale)

Bodo Möller Chemie Schweiz AG
Schweiz

Bodo Möller Chemie Austria GmbH
Österreich / Slowenien

Bodo Möller Chemie France SAS
Frankreich

Bodo Möller Chemie Benelux N.V.
Benelux

Bodo Möller Chemie Denmark Aps
Dänemark

Bodo Möller Chemie Sweden AB
Schweden / Norwegen

Bodo Möller Chemie Finland Oy
Finnland / Estland

Bodo Möller Chemie Polska Sp. z o.o.
Polen / Litauen / Lettland / Balkanstaaten

Europa

Bodo Möller Chemie Czech & Slovakia, s.r.o.
Tschechien / Slowakei

Bodo Möller Chemie Hungary Kft.
Ungarn

BODO MÖLLER CHEMIE Austria GmbH - Podružnica Zagreb
Kroatien

Bodo Möller Chemie Russia LLC
Russland

Bodo Möller Chemie UK Ltd.
UK / Irland

Afrika

Bodo Möller Chemie South Africa (PTY) Ltd.
Südafrika / Subsahara Afrika / Nigeria

Bodo Möller Chemie Kenya Ltd.
Kenia

Bodo Moeller Chemie Egypt SAE
Bodo Moeller Chemie Egypt Import Ltd.
Ägypten

Bodo Moeller Chemie Morocco SARLAU
Marokko

Asien

Bodo Möller Chemie Middle East FZE
Vereinigten Arabischen Emirate / Arabische Halbinsel

Bodo Möller Chemie Israel Ltd.
Israel

Bodo Moeller Chemie (Shanghai) Co., Ltd.
Bodo Moeller Chemie Hong Kong Ltd.
China

Bodo Moeller Chemie India Private Limited
Indien

Amerika

Bodo Möller Chemie Corp.
USA

Bodo Möller Chemie México, S. de R.L. de C.V.
Mexiko

Bodo Möller Chemie GmbH, Senefelderstr. 176, 63069 Offenbach, www.bm-chemie.com, info@bm-chemie.com, T +49 69 838326-0

State 10/2019